Rice University
ELEC 220: Fundamentals of Computer Engineering
Course Information, Spring 2014

Instructors:
Joseph Cavallaro, cavallar@rice.edu, DCH 3042, x4719
Office hours: T,Th 2:30 - 4:00 pm
Lead TA: TBA

Course Schedule:
Lecture: T/Th 1:00-2:20PM, Keck 100.
Lab: One of six/seven sessions starting week of Jan. 27 in AEL A116: T 2:30-4:30pm, T 7-9pm, W 3-5pm, W 7-9pm, Th 2:30-4:30pm, Th 7-9pm, F 3-5pm.

Course Description:
This course provides an overview of fundamental topics in computer engineering, including bits, CMOS logic, computer arithmetic, state machines, instruction-sets, assembly language, linkage conventions, storage hierarchies, interrupts, I/O, and systems issues. Generally, the first five weeks focus on digital logic and simulation, the second five weeks on assembly language and computer architecture, and the third five weeks on high level languages, system design issues, and application-specific systems.

New for 2014:
(1) We plan to use OpenStax Tutor https://openstaxtutor.org/ for the homework assignments, and also the laboratory prep questions. (2) We plan to post some videos that cover portions of the class material to allow more time in class for questions and problem solving.

Prerequisites: None

Course Websites:

http://owlspace.rice.edu/
We will be using Owlspace for assignments and lab scheduling and announcements.
http://www.owlnet.rice.edu/~elec220

Course Textbook:
Introduction to Computing Systems **2nd Edition** by Patt and Patel, McGraw-Hill Publishers; 2004, ISBN-10: 0-07-246750-9, ISBN-13: 978-0-07-246750-5 at Campus Store. Please be sure to get 2nd Edition from 2004 with the blue cover.

Lab Sessions:
Each student is required to register for and attend a weekly lab session in Abercrombie Labs, A116. Please check Owlspace to see available times and to select a lab session. Each session is for about 20 students. Lab will begin the week of January 27, 2014 for

about 13 weeks. The hardware labs are based around an Altera FPGA and a Texas Instruments MSP430 processor and associated design and simulation tools.

> ***Project topics:*** A calculating circuit based on logic gates, and Writing a simulator for a really little computer.
> ***Lab topics:*** Digital Logic, Simple Assembly Programming, I/0, Traps, and Interrupts, and Real-time Sensing (Digital Voltmeter).

Class participation:
Students are expected to attend both lecture and lab and are encouraged to ask questions during course meetings throughout the semester. In addition, students are expected to enter free responses to all homework and exam questions in the OpenStax Tutor system.

Grading:
Homework: 8 assignments, 3% each = 24% (All due on Wednesday night on OpenStax Tutor; as part of learning objectives, must view solutions a week after posting to receive credit.)
Labs: 5 assignments, 3% each = 15% (Demo in lab to a lab assistant)
Lab Preparation Quizzes: Several during the semester total = 3% (OpenStax Tutor).
Participation: Class participation and OpenStax Tutor free response answers = 3%
Projects: First - calculator 10%, Second - computer simulator, 12%; total = 22%
Exams: Three, non-cumulative, (late Feb, late March, during Finals) 11% each = 33%

Honor code policy:
General Assignments: When working in groups for labs and projects, your group counts as a single individual for this policy, and your group receives a single score. You may use your text, course notes, and any other reference material (that is not a solution). You may discuss problems, general strategies, or algorithms with other people (in the course or not). When partnering, you should understand and be able to recreate any part of the solutions on your own. For all assignments, you may NOT use solutions from past classes or found on the web. You may not obtain code from anyone (in the course or not), aside from code provided as part of the course.

Homework Honor Code: Please remember the grading and honor code policies. Complete homework assignments individually. Please list your name on the submitted solution. Solutions submitted after the date and time specified will receive no credit. You may freely use the 2014 course notes, the course textbook, or course handouts for the assignments. Students may discuss and compare ideas on the homework assignments, but each student must write up solutions individually without resort to copying. That is, students must not create submissions together; students may discuss problems, but may not actually write up their assignments together. You should also not refer to solutions posted on the web or from previous years' classes. Clearly state any assumptions that you make in order to solve the problems, and show all your work.

Students with Disabilities:
Any student with a disability requiring accommodations in this course is encouraged to contact the instructor after class or during office hours. Additionally, students will need to contact Disability Support Services in the Ley Student Center.